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09/616,878	07/14/2000	Jin-Meng Ho	03493.00083	6604

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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/616,878	HO ET AL.	
	Examiner	Art Unit	
	Chirag G Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 8-17 and 21-26* is/are rejected.

7)☒ Claim(s) *5-7 and 18-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETALED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 13,14, 25, and 26 are rejected under 35 U.S.C. 102(a) as being anticipated by Yavatkar (RFC 2814).

Regarding claim 1, Yavatkar teaches an architecture for a local area network (LAN) comprising of a set of devices or stations (STAs) connected as a Basic Service Set (BSS) (Fig. 1 p. 6). Communication sessions can be established between a pair of STAs having a defined quality of service (QoS).

An entity called the SBM (Subnet Bandwidth Manager) is defined for admission control and bandwidth management in the LAN (p. 1 sec. 2). The SBM is incorporated at end STAs for admission control with per flow shaping. Using RSVP signaling, the SBM can allow guaranteed quality of service in IEEE 802 networks.

Another entity named Designated SBM (DSBM) is defined that resides in an Access Point (AP) in an 802.1x LAN. The AP also contains a PC (Point Coordinator) to facilitate

polling of STAs for TXOP (Transmission Opportunity). This is basic information and can be found in the MAC/PHY layer standards published by IEEE 802.11 Task Group b.

Details of the admission control by the DSBM using RSVP signaling are taught by Yavatkar (p.6 sec. 1, 2 and 3). Yavatkar teaches the DSBM extracting, processing and updating QoS parameters from the PATH/RESV message, and making a determination whether or not to admit the session to the network. A status report or a note can be passed to previous L2/L3 hop (including MAC layer) that sent the DSBM the PATH message.

Yavatkar teaches the retaining of several state information for the management of the QoS. These states are the set of resources that need to be reserved to guarantee the QoS. This information is contained in the PATH message. Also the L2/L3 addresses of the sending router need to be stored, as well as its own L2/L3 addresses. Also, the DSBM has to insert itself as the intermediate node between the sender and the receiver on the managed path, and record this information (p. 7, sec. 3 (a) para. 3). All these information can be stored and managed in an entity, like the entity QME mentioned by the applicant. The DSBM is itself a part of the overall QoS management process, hence part of the QME.

Once a session is admitted, packets travels hop-by-hop from the sender to the receiver along the RSVP designated segments. In doing so, the session may traverse to multiple DSBMs, with each DSBM controlling a designated segment. The RSVP segments

between a DSBM and a destination STA for a virtual circuit connection, and may be referred to as a Virtual Up-Stream (VUS) as referred to by the applicant.

Regarding claim 14, Yavatkar teaches architecture and procedures for bandwidth management and admission control in IEEE 802 style networks. This may be IEEE 802.11 WLAN. In this case, the architecture comprises of a collection of non-PC stations (STAs) connected in infrastructure mode, and communicating via an Access Point (AP). The AP contains a point coordinator (PC). Communication sessions can be established between a pair of STAs having a predefined quality of service (QoS).

An entity called the SBM (Subnet Bandwidth Manager) is defined for admission control and bandwidth management in the LAN (p. 1 sec. 2). The SBM is incorporated into non-PC STAs for bandwidth management. The SBM can request resource reservation for attaining the desired level of QoS in an up-stream session between its STA and at least one non-PC destination STA.

Another entity named Designated SBM (DSBM) is defined that resides in an Access Point (AP) in an 802.1x LAN. The AP also contains a PC (Point Coordinator) to facilitate polling of STAs for TXOP (Transmission Opportunity). This is basic information and can be found in the MAC/PHY layer standards published by IEEE 802.11 Task Group b.

Details of the admission control by the DSBM using RSVP signaling are taught by Yavatkar (p.6 sec. 1, 2 and 3). Yavatkar teaches the DSBM extracting, processing and updating QoS parameters and classifier from the PATH/RESV message, and further making a determination whether or not to admit the session to the network. A status report or a note can be passed to previous L2/L3 hop (including MAC layer) that sent the DSBM the PATH message.

Yavatkar teaches the retaining of several state information for the management of the QoS. These states are the set of resources that need to be reserved to guarantee the QoS. This information is contained in the PATH message. Also the L2/L3 addresses of the sending router need to be stored, as well as its own L2/L3 addresses. Also, the DSBM has to insert itself as the intermediate node between the sender and the receiver on the managed path, and record this information (p. 7, sec. 3 (a) para. 3). All these information can be stored and managed in an entity, like the entity QME mentioned by the applicant. The DSBM is itself a part of the overall QoS management process, hence part of the QME.

Once a session is admitted, packets travels hop-by-hop from the sender to the receiver along the RSVP designated segments. In doing so, the session may traverse to multiple DSBMs, with each DSBM controlling a designated segment. The RSVP segment between a DSBM and a destination STA for a virtual circuit connection, and may be referred to as a Virtual Down-Stream (VDS) as referred to by the applicant.

Regarding claim 25, Yavatkar teaches all aspects of the claimed invention set forth in the rejection of claim 14, and Yavatkar further teaches the entire method of DSBM-based admission control using RSVP (p.7 sec. 3).

Yavaktar teaches the DSBM receiving the first PATH message, and propagating to each of the destination STAs. Yavaktar further teaches the receiving of the first RESV message at the DSBM. Then, the step of determining whether or not to admit the up-stream session to the network further comprises of propagating the first RESV message from the DSBM to the SBM associated with the source STA.

Regarding claims 13 and 26, Yavatkar teaches all aspects of the claimed invention set forth in the rejection of claims 1 and 14, and Yavatkar further teaches admission control and bandwidth management in IEEE 802.1p style networks (sec. 2). This includes IEEE 802.11 wireless LAN.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-4, 12, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavatkar in view of Tazaki (US 6,765,872), and further in view of Kamiya (US 6,704,321).

Regarding claim 2, 4 and 17, Yavatkar discloses all aspects of the claimed invention set forth in the rejection of claim 1.

Yavatkar does not explicitly disclose a VSID identifier associated with a VUS connection. Nor about frame classification or frame scheduling.
However, Tazaki teaches about routing of IP traffic using RSVP, to guarantee a predetermined level of quality of service. Tazaki teaches that a virtual session can be assigned identifiers VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) (col 11 ln 35-40). A unique VPI/VCI corresponds to a destination of the packet. This is analogous to the VSID identifier corresponding to a VUS connection. Tazaki further teaches a VPI/VCI correspondence table (col 11 ln 40-44), that contain entries for each virtual circuit corresponding to the VPI/VCI classification. The VPI/VCI table corresponds to the frame classification table of the FCE, while the FCE itself can be the "Interconnection Determining Unit) (Fig. 6 elmt 194). An embodiment of the frame classification table is shown on Fig. 9., and described in the text (col 11, ln 59-67). The classifier associated with the up-stream session is indicated by "Output VPI" and "Output

VCI" respectively. The QoS requirement is shown in the column marked "bandwidth for RSVP". Tazaki does not teach about frame scheduling.

However, Kamiya teaches about frame/cell scheduling (col 5, ln 16-17). A frame scheduling table is indicated in Fig. 5. The frame scheduling table may be contained within the Frame Scheduling Entity (FSE). Entries corresponding to the VUS (where VUS is represented by the VCI) are shown in the table in Fig. 4 and 5. Its well known that all entities, signaling and protocols associated with ATM are located in Layer-2. Thus, the FSE can be logically located in the MAC sublayer; the lower sublayer of layer-2. The entry in the frame scheduling table includes VSID, which is analogous to the Virtual Circuit Identifier (VCI). Each entry in the frame scheduling table can also contain the QoS parameters, as specified by the column in Fig. 9 marked "Bandwidth for RSVP". This is inherent in Fig. 4 and 5, and can be easily incorporated into each table entry.

In view of this, having the system of Yavatkar and then given the teachings of Tazaki and Kamiya, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar to incorporate the teachings of Tazaki and Kamiya.

The motivation to combine is because all three references teach about enforcing a pre-determined level of QoS using RSVP. Tazaki and Kamiya teach about frame classification and scheduling, not taught by Yavatkar.

Regarding claim 3, the combined method of Yavatkar, Tazaki and Kamiya discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 2.
Yavatkar and Kamiya do not explicitly disclose sending of a management frame including information relating to the setup of a virtual session.
However, Tazaki teaches about including information related to the setup of a virtual connection defined by "Output VPI" and "Output VCI" as shown in Fig. 9. This information can be sent in a management cell or frame to set up the virtual session, prior to the transmission of data.

In view of this, having the system of Yavatkar and then given the teachings of Tazaki and Kamiya, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar to incorporate the teachings of Tazaki and Kamiya.
The motivation to combine is because all three references teach about enforcing a pre-determined level of QoS using RSVP. Tazaki's scheme of setting up the virtual session beforehand can enforce a guaranteed level of QoS along that path, before sending the data.

Regarding claim 12, Yavatkar, Tazaki and Kamiya teaches all aspects of the claimed invention set forth in the rejection of claim 1 and 2, and Yavatkar further teaches the entire method of DSBM-based admission control using RSVP (p.7 sec. 3).

Yavaktar teaches the DSBM receiving the first PATH message, and propagating to each of the STAs. Yavaktar further teaches the receiving of the first RESV message at the DSBM. Then, the step of determining at the DSBM whether or not to admit the down-stream session to the network further comprises of propagating the first RESV message from the DSBM to the SBM associated with the source STA.

Regarding claim 15, Yavatkar discloses all aspects of the claimed invention set forth in the rejection of claim 14.

Yavatkar does not explicitly disclose a VSID identifier associated with a VUS connection. Nor about frame classification or frame scheduling.
However, Tazaki teaches about routing of IP traffic using RSVP, to guarantee a predetermined level of quality of service. Tazaki teaches that a virtual session can be assigned identifiers VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) (col 11 ln 35-40). A unique VPI/VCI corresponds to a destination of the packet. This is analogous to the VSID identifier corresponding to a VUS connection. Tazaki further teaches a VPI/VCI correspondence table (col 11 ln 40-44) that contains entries for each virtual circuit corresponding to the VPI/VCI classification. The VPI/VCI table corresponds to the frame classification table of the FCE, while the FCE itself can be the "Interconnection Determining Unit) (Fig. 6 elmt 194). An embodiment of the frame classification table is shown on Fig. 9., and described in the text (col 11, ln 59-67). The classifier associated with the up-stream session is indicated by "Output VPI" and "Output

VCI" respectively. The QoS requirement is shown in the column marked "bandwidth for RSVP". Tazaki does not teach about frame scheduling.

However, Kamiya teaches about frame/cell scheduling (col 5, ln 16-17). A frame scheduling table is indicated in Fig. 5. The frame scheduling table may be contained within the Frame Scheduling Entity (FSE). Entries corresponding to the VUS (where VUS is represented by the VCI) are shown in the table in Fig. 4 and 5. Its well known that all entities, signaling and protocols associated with ATM are located in Layer-2. Thus, the FSE can be logically located in the MAC sublayer; the lower sublayer of layer-2. The entry in the frame scheduling table includes VSID, which is analogous to the Virtual Circuit Identifier (VCI). Each entry in the frame scheduling table can also contain the QoS parameters, as specified by the column in Fig. 9 marked "Bandwidth for RSVP". This is inherent in Fig. 5, and can be easily incorporated into each table entry.

In view of this, having the system of Yavatkar and then given the teachings of Tazaki and Kamiya, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar to incorporate the teachings of Tazaki and Kamiya.

The motivation to combine is because all three references teach about enforcing a pre-determined level of QoS using RSVP. Tazaki and Kamiya teach about frame classification and scheduling, not taught by Yavatkar.

Regarding claim 16, the combined method of Yavatkar, Tazaki and Kamiya discloses all aspects of the claimed invention set forth in the rejection of claims 14 and 15.
Yavatkar and Kamiya does not explicitly disclose sending of a management frame including information relating to the setup of a virtual session.
However, Tazaki teaches about including information related to the setup of a virtual connection defined by "Output VPI" and "Output VCI" as shown in Fig. 9. This information can be sent in a management cell or frame to set up the virtual session, prior to the transmission of data.

In view of this, having the system of Yavatkar and then given the teachings of Tazaki and Kamiya, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar to incorporate the teachings of Tazaki and Kamiya.
The motivation to combine is because all three references teach about enforcing a pre-determined level of QoS using RSVP. Tazaki's scheme of setting up the virtual session beforehand can enforce a guaranteed level of QoS along that path, before sending the data.

5. Claims 8 are 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavatkar, Tazaki and Kamiya, and further in view of Braden (RFC 2205).

Regarding claim 8, 9, 11, 22 and 24, the combined method of Yavatkar, Tazaki and Kamiya discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 2.

These references do not explicitly disclose the tearing down of an existing RSVP connection.

However, Braden teaches two types of RSVP messages for the termination of an existing RSVP path and immediately removing all the reservation states (Section 2.4). Teardown proceeds in a similar fashion to setup, as described in the rejection of claims 1 and 2. The classifier is the VPI/VCI identifier, it is extracted from the header of the PATH/RESV message. Braden's teaching that "all reservation states are removed" entails that the entry corresponding to the VPI/VCI must be deleted from the classification table. Likewise, the VPI/VCI entry is deleted from the scheduling table. The PATH/RSVP teardown message is propagated from the DSBM (PC-STA) to each destination non-PC-STAs, as is the requirement in the RSVP teardown message procedure in Braden.

In view of this, having the combined system of Yavatkar, Tazaki and Kamiya, and then given the teachings of Braden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar, Tazaki and Kamiya to incorporate the teachings of Braden.

The motivation to combine is because Braden provides an explicit detail of the RSVP teardown message, which is essential for the removal of the QoS reservation state after

the session has been completed, so that the reserved resources can be reallocated to other sessions.

Regarding claim 21, the combined method of Yavatkar, Tazaki and Kamiya discloses all aspects of the claimed invention set forth in the rejection of claims 14 and 15.
These references do not explicitly disclose the tearing dowm of an existing RSVP connection.
However, Braden teaches two types of RSVP messages for the termination of an existing RSVP path and immediately removing all the reservation states (Section 2.4). Teardown proceeds in a similar fashion to setup, as described in the rejection of claims 1 and 2. The classifier is the VPI/VCI identifier, it is extracted from the header of the PATH/RESV message. Braden's teaching that "all reservation states are removed" entails that the entry corresponding to the VPI/VCI must be deleted from the classification table. Likewise, the VPI/VCI entry is deleted from the scheduling table. The PATH/RSVP teardown message is propagated from the DSBM (PC-STA) to each destination non-PC-STAs, as is the requirement in the RSVP teardown message procedure in Braden.

In view of this, having the combined system of Yavatkar, Tazaki and Kamiya, and then given the teachings of Braden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar, Tazaki and Kamiya to incorporate the teachings of Braden.

The motivation to combine is because Braden provides an explicit detail of the RSVP teardown message, which is essential for the removal of the QoS reservation state after the session has been completed, so that the reserved resources can be reallocated to other sessions.

6. Claim 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavatkar, Tazaki and Kamiya, Braden and further in view of Golden (US 6,563,793).

Regarding claim 10, the combined method of Yavatkar, Tazaki, Kamiya and Braden discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2 and 8.

These references do not explicitly disclose the tearing down of an existing RSVP connection in the event of a timeout signal.

However, Golden teaches the tearing down of a connection after detecting a timeout event. The timeout event can be triggered by a predetermined length of time elapsing and not receiving a PATH/RESV message for an up-stream session. Teardown proceeds in a similar fashion to setup, as described in the rejection of claims 1 and 2. The classifier is the VPI/VCI identifier; it is extracted from the header of the PATH/RESV message. Braden's teaching that "all reservation states are removed" entails that the entry corresponding to the VPI/VCI must be deleted from the classification table. Likewise, the

VPI/VCI entry is deleted from the scheduling table. The PATH/RSVP teardown message is propagated from the DSBM (PC-STA) to each destination non-PC-STAs, as is the requirement in the RSVP teardown message procedure in Braden.

In view of this, having the combined system of Yavatkar, Tazaki and Kamiya, and then given the teachings of Golden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar, Tazaki and Kamiya to incorporate the teachings of Golden.
The motivation to combine is because Golden provides an explicit detail of the RSVP teardown message, which is essential for the removal of the QoS reservation state after the session has been completed, so that the reserved resources can be reallocated to other sessions.

Regarding claim 23, the combined method of Yavatkar, Tazaki, Kamiya and Braden discloses all aspects of the claimed invention set forth in the rejection of claim 21. These references do not explicitly disclose the tearing down of an existing RSVP connection in the event of a timeout signal.

However, Golden teaches the tearing down of a connection after detecting a timeout event. The timeout event can be triggered by a predetermined length of time elapsing and not receiving a PATH/RESV message for an up-stream session. Teardown proceeds in a similar fashion to setup, as described in the rejection of claims 1 and 2. The classifier is

the VPI/VCI identifier; it is extracted from the header of the PATH/RESV message. Braden's teaching that "all reservation states are removed" entails that the entry corresponding to the VPI/VCI must be deleted from the classification table. Likewise, the VPI/VCI entry is deleted from the scheduling table. The PATH/RSVP teardown message is propagated from the DSBM (PC-STA) to each destination non-PC-STAs, as is the requirement in the RSVP teardown message procedure in Braden.

In view of this, having the combined system of Yavatkar, Tazaki and Kamiya, and then given the teachings of Golden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Yavatkar, Tazaki and Kamiya to incorporate the teachings of Golden.

The motivation to combine is because Golden provides an explicit detail of the RSVP teardown message, which is essential for the removal of the QoS reservation state after the session has been completed, so that the reserved resources can be reallocated to other sessions.

Allowable Subject Matter

7. Claims 5-7 and 18-20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703)305-3988, (for formal communications intended for entry)

Or:

(703)305-3988 (for informal or draft communications, please label "Proposed" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
September 28, 2004

Ajit Patel
Primary Examiner